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Volume 1, No. 1

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AN ANALYSIS OF THE EFFECTS THREE MODES OF ORAL PRESENTATION HAVE ON CERTAIN COGNITIVE SKILLS AS MEASURED BY SCORES OBTAINED BY BLIND SENIOR HIGH SCHOOL STUDENTS[1]

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A majority of the visually handicapped students in the United States is being educated in local public schools along with sighted students. Braille and large print reading rates are only 40% as efficient as print reading, and listening to recorded material at normal speed is only 70% as efficient as print reading. The increasing amount of supplemental and collateral reading required in the school curriculum of today puts an additional burden on the visually handicapped student since his modes of reading require so much more time than that needed by the sighted student to cover the same amount of material.

The author, in a previous investigation, tried to eliminate the time handicap to visually impaired students by having them listen to recorded material which had been compressed or accelerated to 57% increase over the original time. He compared the two modes of recorded speech, compression and acceleration, with the results obtained from comprehension and recall tests which were given to the blind students. In addition, he compared both modes of speeded recorded speech with the normal speed. The compressed mode and the normal mode of presentation were

[1]The work presented or reported herein was performed pursuant to a grant from the U.S. Office of Education, Department of Health, Education and Welfare.

significantly superior to the accelerated mode for both comprehension and recall. There was no significant difference between the compressed mode and the normal mode for either comprehension or recall, although there was a shift from the average mean score for comprehension favoring the normal mode to the average mean score for recall favoring the compressed mode. Individual test scores were not uniformly consistent; thus, the writer felt that further investigation was necessary. He theorized that the cognitive skills of listening, such as plain sense comprehension, interpretation and evaluation and application may be affected according to the mode of oral presentation being used.

Tables I-III show the results of a statistical analysis of the data. Plain sense comprehension comprised 35% of the test material used, interpretation comprised 40%, and evaluation and application 25%. The results in Table I show a relative consistency of mean scores favoring the compressed method of presenting recorded material over the accelerated method. However, although the total scores for both comprehension and recall were significant in favor of compression, it will be noted that the third category, evaluation and application, showed no significant differences favoring either mode for either comprehension or recall.

When reading Table II, one finds that although there were no significant differences between the modes of recorded speech presented, compressed and normal, for either

comprehension or recall in the total scores, there were significant differences which showed up in the skill areas of plain sense comprehension and in interpretation on the comprehension level. The results on the plain sense comprehension were significant in favor of the normal mode of recorded oral presentation. The results for interpretation on the comprehension were significant in favor of compression. There were no other statistically significant findings comparing the two modes of recorded oral presentation of compression and normal speed.

An investigation of the data found in Table III, indicates that more students will achieve higher mean scores for comprehension in all three skill areas of listening when they are presented with the normal speed mode of listening than they will with the accelerated mode of listening. The data for recall in Table III, show the skill area of interpretation to be the only one yielding significant results favoring the normal mode of oral presentation.

There can be several conclusions drawn from an analysis of the data found in Tables I, II, and III. The first is that there are some significant differences in comprehension and recall scores among the modes or oral recorded presentation and these differences depend upon the listening skill being examined. Both the compressed and normal modes or oral presentation show significant superiority to the accelerated mode when the interpretation skill area of listening was being measured. It can be seen in Table III that this difference was so great favoring the normal mode of oral

presentation that the total score favoring the normal method became significant over the use of the accelerated method. It would appear, from an examination of the recall columns, that a 57% increase in material output through the use of the compressed method would not yield significantly different results from those obtained through the use of the normal method of presenting recorded oral material. Indeed, it may be that material heavily weighted toward the use of the interpretative skill process would yield better results with the use of the compressed mode. When compression is measured against normal in the skill area of plain sense comprehension for comprehension the results are significant favoring the normal method. However, when testing for recall we find this difference between the two modes no longer remains significant.

It is unfortunate that the state of the art for producing speech compression does not allow the individual student to vary the speed of compression for the author feels that if he were able to do so, the results of measuring comprehension and recall might become more meaningful.

The author recommends the carrying out of an experiment using a lower speed for compression and acceleration. He also recommends an investigation of the possibility of producing or adapting present equipment which will allow the individual student to vary his aural speed without introducing a pitch distortion.

REFERENCE

Gore, George V. III. Comparison of two methods of speeded to blind senior high school students. (Published Doctoral dissertation, TC-Columbia) New York, N.Y. 1968.

TABLE I

MEAN DIFFERENCES, STANDARD DEVIATION OF DIFFERENCE AND t-TESTS, ACCELERATED VS. COMPRESSED (*SIGNIFICANT AT ALPHA = .05)

	Total (Converted Scores)	Plain Sense Comprehension**	Interpretation**	Evaluation Application**
Comprehension	$\overline{D}$ = 10.75	$\overline{D}$ = .147	$\overline{D}$ = .114	$\overline{D}$ = .0575
	s_d = 13.02	s_d = .17	s_d = .123	s_d = .175
	t_{15} = 3.298*	t_{15} = 3.458*	t_{15} = 3.707*	t_{15} = 1.316
Recall	$\overline{D}$ = 8.40	$\overline{D}$ = .153	$\overline{D}$ = .0833	$\overline{D}$ = .0307
	s_d = 11.06	s_d = .152	s_d = .142	s_d = .176
	t_{14} = 2.938*	t_{14} = 3.895*	t_{14} = 2.270*	t_{14} = .6750

**Adjusted Decimal Scores

*t_{15}; .95 = 1.753

*t_{14}; .95 = 1.761

TABLE II

MEAN DIFFERENCES, STANDARD DEVIATION OF DIFFERENCE AND t-TESTS
COMPRESSED VS. NORMAL (*SIGNIFICANT AT ALPHA = .05)

	Total (Converted Scores)	Plain Sense Comprehension**	Interpretation**	Evaluation, Application**
Comprehension	$\overline{D}$ = 3.0	$\overline{D}$ = .361	$\overline{D}$ = -.22	$\overline{D}$ = -.014
	s_d = 9.46	s_d = .301	s_d = .205	s_d = .217
	t_7 = .897	t_7 = 3.392*	t_7 = -3.0348*	t_7 = -0.1824
Recall	$\overline{D}$ = -1.5	$\overline{D}$ = .089	$\overline{D}$ = -.149	$\overline{D}$ = .075
	s_d = 11.82	s_d = .297	s_d = .278	s_d = .352
	t_7 = -.359	t_7 = 0.8474	t_7 = -1.5157	t_7 = 0.6025

**Adjusted Decimal Scores

*t_7; .95 = 1.895

TABLE III
MEAN DIFFERENCES, STANDARD DEVIATION OF DIFFERENCE AND t-TESTS
ACCELERATED VS. NORMAL (*SIGNIFICANT AT ALPHA + .05)

	Total (Converted Scores)	Plain Sense Comprehension**	Interpretation**	Evaluation,** Application
Comprehension	$\overline{D}$ = 16.75 s_d = 10.61 t_7 = 4.468*	$\overline{D}$ = .287 s_d = .297 t_7 = 2.685*	$\overline{D}$ = .428 s_d = .321 t_7 = 3.7706*	$\overline{D}$ = .245 s_d = .411 t_7 = 2.828*
Recall	$\overline{D}$ = 9.86 s_d = 11.55 t_6 = 2.262*	$\overline{D}$ = .111 s_d = .348 t_6 = 0.8439	$\overline{D}$ = .277 s_d = .334 t_6 = 2.2273*	$\overline{D}$ = .189 s_d = .348 t_6 = 1.4370

**Adjusted Decimal Scores

*t_7; .95 = 1.895

*t_6; .95 = 1.943